

Audit Report



19990913 064

HAZARDOUS MATERIAL MANAGEMENT FOR THE C/KC-135 STRATOTANKER AIRCRAFT

Report Number 99-177

June 4, 1999

DTIC QUALITY INSPECTED 4

Office of the Inspector General
Department of Defense

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

AQI 99-11- 1978

Additional Copies

To obtain additional copies of this audit report, contact the Secondary Reports Distribution Unit of the Audit Followup and Technical Support Directorate at (703) 604-8937 (DSN 664-8937) or fax (703) 604-8932 or visit the Inspector General, DoD, Home Page at: www.dodig.osd.mil.

Suggestions for Future Audits

To suggest ideas for or to request future audits, contact the Audit Followup and Technical Support Directorate at (703) 604-8940 (DSN 664-8940) or fax (703) 604-8932. Ideas and requests can also be mailed to:

OAIG-AUD (ATTN: AFTS Audit Suggestions)
Inspector General, Department of Defense
400 Army Navy Drive (Room 801)
Arlington, VA 22202-2884

Defense Hotline

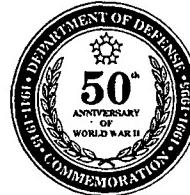
To report fraud, waste, or abuse, contact the Defense Hotline by calling (800) 424-9098; by sending an electronic message to Hotline@dodig.osd.mil; or by writing to the Defense Hotline, The Pentagon, Washington, DC 20301-1900. The identity of each writer and caller is fully protected.

Acronyms

PESHE	Programmatic Environmental, Safety, and Health Evaluation
SFFAS	Statement of Federal Financial Accounting Standards



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884



June 4, 1999

MEMORANDUM FOR ASSISTANT SECRETARY OF THE AIR FORCE
(FINANCIAL MANAGEMENT AND COMPTROLLER)

SUBJECT: Audit Report on Hazardous Material Management for the C/KC-135
Stratotanker Aircraft (Report No. 99-177)

We are providing this audit report for information and use. The Joint Logistics Commanders requested an audit of hazardous material management for major Defense systems. This report is the second in a series of reports resulting from the requested audit.

We considered Air Force comments on a draft of this report in preparing this final report. The comments on the draft report conformed to the requirements of DoD Directive 7650.3. Therefore, we do not require additional comments.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. John E. Meling at (703) 604-9091 (DSN 664-9091) (jmeling@dodig.osd.mil) or Mr. Jack D. Snider at (703) 604-9087 (DSN 664-9087) (jsnider@dodig.osd.mil). See Appendix C for the report distribution. The audit team members are listed inside the back cover.

David K. Steensma
David K. Steensma
Deputy Assistant Inspector General
for Auditing

Office of the Inspector General, DoD

Report No. 99-177

(Project No. 8AE-5037.01)

June 4, 1999

Hazardous Material Management for the C/KC-135 Stratotanker Aircraft

Executive Summary

Introduction. The C/KC-135 Stratotanker Aircraft (the C/KC-135) is an Air Force program that consists of Acquisition Category II and III modification programs.¹ The principal mission of the C/KC-135 aircraft is aerial refueling of other aircraft. The Air Force acquired 808 stratotankers and other variants² of the C/KC-135 aircraft, of which 548 stratotankers and 46 special-purpose variants are on active duty. The average age of the aircraft in the fleet is 39 years. The stratotankers are equipped with a flying boom for fuel transfer and a deck above the fuselage-mounted tanks for passengers and cargo. Eight Air Force major commands, the National Aeronautics and Space Administration, and three foreign militaries operate C/KC-135 aircraft. The Air Force plans to operate the stratotanker fleet until 2040 and estimates that the total life-cycle cost to continue the program until then will be about \$76 billion.

Objectives. The Joint Logistics Commanders requested an audit of hazardous material management for major Defense systems. The C/KC-135 is one of nine programs included in the audit. The overall audit objective was to evaluate the adequacy of planning and providing for the reduction and control of hazardous materials used in the design, manufacture, maintenance, and disposal of the C/KC-135. Specifically, we evaluated whether the program manager managed the selection, use, and disposal of hazardous materials so that DoD incurs the lowest cost required to protect human health and the environment over the system's life cycle that is consistent with the system's cost, schedule, and performance goals. We also evaluated the management control program as it related to the audit objective.

Results. Overall, the C/KC-135 Program Office planned and provided for the reduction of hazardous material in the C/KC-135. However, the following two areas warrant management attention to ensure that the Program Office identifies potential demilitarization and disposal liabilities and evaluates the impact of environmental, safety, and health issues on mission and cost:

- The C/KC-135 Program Office did not include the cost of demilitarization and disposal of the C/KC-135 at the end of its useful life in the program's life-cycle cost estimate. As a result, the Program Office cannot accurately report in Air Force financial statements the liability for demilitarization, disposal, and cleanup costs for the C/KC-135 over the next 41 years (finding A).

¹Examples of the Acquisition Category II and III modification programs include installing new engines on various models of the aircraft, major avionics modifications, satellite communications upgrade, and navigation and safety upgrades

²The variants of the C/KC-135 include reconnaissance, electronic warfare, transport, and testbed aircraft.

-
- The C/KC-135 Program Office did not develop a programmatic environmental, safety, and health evaluation that included an environmental strategy, program environmental responsibilities, and a methodology to track and document the completion of the environmental strategy throughout the program's life-cycle. Without the evaluation, the Program Office cannot ensure that it is aware of the impact of environmental, safety, and health issues on mission and cost and may also be forgoing opportunities to further reduce environmental life-cycle costs over the extended life span of the C/KC-135 (finding B).

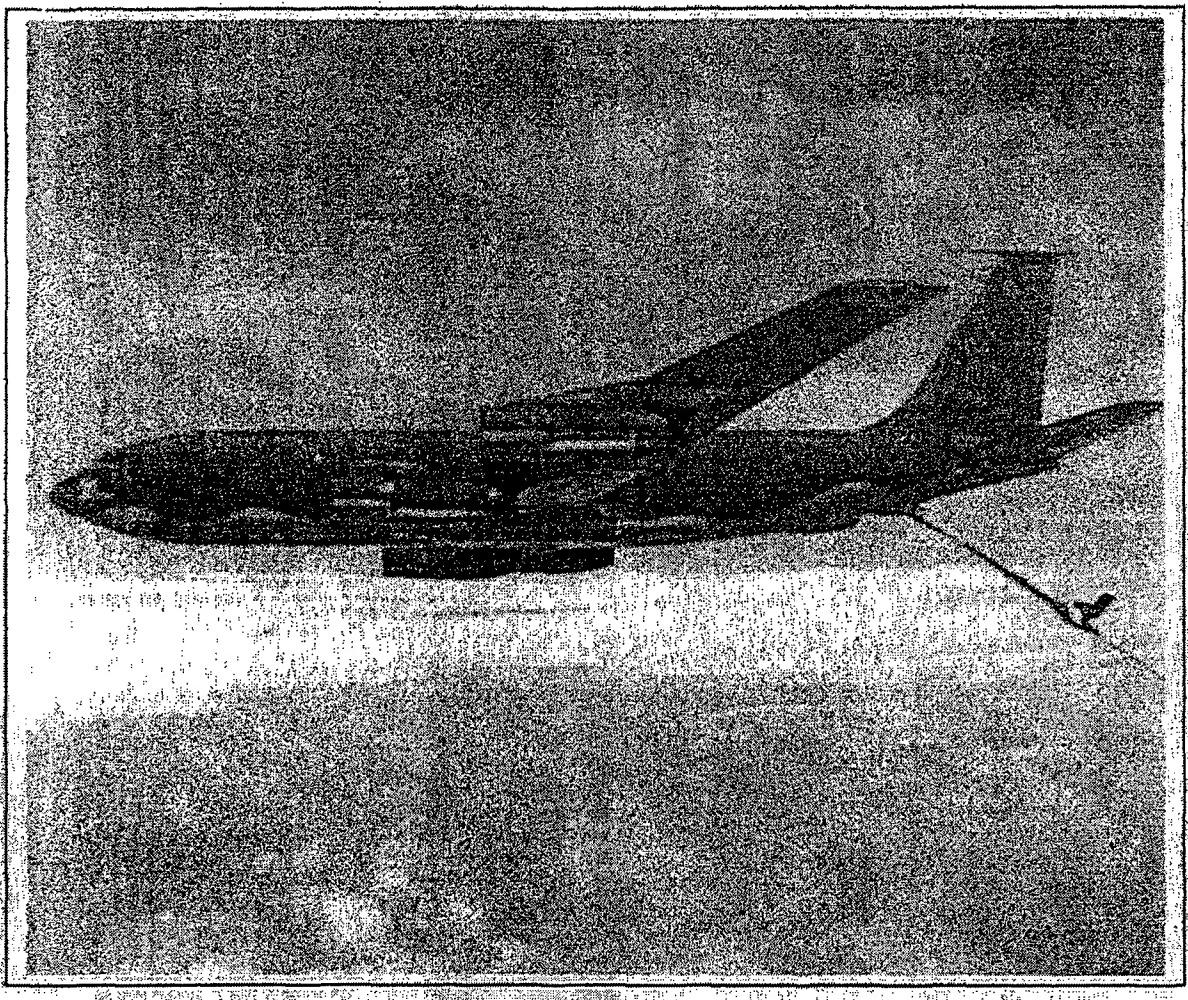
Recommendations in this report, if implemented, will improve the hazardous material management of the C/KC-135. The management controls that we reviewed were effective in that no material management control weakness was identified (Appendix A).

Summary of Recommendations. We recommend that the C/KC-135 System Program Director include demilitarization and disposal costs of the C/KC-135 in its life-cycle cost estimate and annually review the programmatic environmental, safety, and health evaluation in the C/KC-135 Weapon System Pollution Prevention Master Plan to incorporate the environmental effect of upgrades to the program, as appropriate.

Management Comments. The Office of the Assistant Secretary of the Air Force (Acquisition) concurred with the findings and recommendations and provided the actions the C/KC-135 Program Office plans to take in response to the recommendations. A discussion of the management comments is in the Findings section of the report, and the complete text is in the Management Comments section.

Table of Contents

Executive Summary	i
Introduction	
Background	1
Objectives	1
Noteworthy Environmental Efforts	2
Findings	
A. Environmental Life-Cycle Costs	4
B. Programmatic Environmental, Safety, and Health Evaluation	8
Appendixes	
A. Audit Process	
Scope and Methodology	10
Management Control Program Review	11
Summary of Prior Coverage	12
B. Definitions of Technical Terms	13
C. Report Distribution	15
Management Comments	
Department of the Air Force Comments	17



C/KC-135 Stratotanker Aircraft

Background

This report discusses the adequacy of planning and providing for the reduction and control of hazardous materials used in the design, manufacture, maintenance, and disposal of the C/KC-135 Stratotanker Aircraft (the C/KC-135) and associated upgrades. DoD environmental management policy relating to hazardous materials is to prevent, mitigate, or remediate environmental damage that acquisition programs cause. In designing, manufacturing, testing, operating, and disposing of systems, DoD program managers are to prevent or reduce all forms of pollution at the source, whenever feasible. Prudent investments in pollution prevention can reduce life-cycle environmental cost and liability and improve environmental quality and program performance. Further, the Secretary of Defense, in his 1998 annual report to the President and Congress, stated that DoD urgently needed to reduce the total ownership costs of its systems to sustain force modernization and recapitalization. To reduce total ownership costs, program managers need to focus on total life-cycle costs in the development and production phases of the weapon system acquisition life-cycle so that trade-offs can be made between investments in the development and production phases and reduced costs in the operation and support phase. Appendix B provides definitions of technical terms used in this report.

The C/KC-135, as shown on the opposite page, is an Air Force program that consists of Acquisition Category II and III modification programs.¹ The principal mission of the C/KC-135 is aerial refueling of other aircraft. The Air Force acquired 808 stratotankers and other variants² of the C/KC-135 aircraft, of which 548 stratotankers and 46 special-purpose variants are on active duty. The average age of the aircraft in the fleet is 39 years. The stratotankers are equipped with a flying boom for fuel transfer and a deck above the fuselage-mounted tanks for passengers and cargo. Eight Air Force major commands, the National Aeronautics and Space Administration, and three foreign militaries operate C/KC-135 aircraft. The Air Force plans to operate the stratotanker fleet until 2040 and estimates that the total life-cycle cost to continue the program until then will be about \$76 billion. Military and commercial organizations provide depot maintenance for the aircraft.

Objectives

The Joint Logistics Commanders requested an audit of hazardous material management for major Defense systems. The C/KC-135 is one of nine programs included in the audit. The overall audit objective was to evaluate the adequacy of planning and providing for the reduction and control of hazardous

¹Examples of the Acquisition Category II and III modification programs include installing new engines on various models of the aircraft, major avionics modifications, satellite communications upgrade, and navigation and safety upgrades

²The variants of the C/KC-135 include reconnaissance, electronic warfare, transport, and testbed aircraft.

materials used in the design, manufacture, maintenance, and disposal of the C/KC-135. Specifically, we evaluated whether the program manager managed the selection, use, and disposal of hazardous materials so that DoD incurs the lowest cost required to protect human health and the environment over the system's life cycle that is consistent with the system's cost, schedule, and performance goals. We also evaluated the management control program as it related to the audit objective. This report is the second in a series of reports on our ongoing audit of hazardous material management for major Defense systems. The first report addresses hazardous material management for the Army Grizzly Program. Appendix A discusses the audit scope and methodology used to accomplish the objective as well as management controls and prior audit coverage.

Noteworthy Environmental Efforts

The C/KC-135 Program Office incorporated environmental pollution reduction efforts into its acquisition and maintenance process by reducing ozone depleting chemicals and industrial toxins³ and by testing corrosion- and fade-resistant paint.

Ozone-Depleting Chemicals and Industrial-Toxin Reductions. The C/KC-135 Program Office in conjunction with the Tinker Air Force Base, Oklahoma City, Oklahoma, depot operations have pursued an aggressive pollution prevention program concerning the use of ozone-depleting chemicals and industrial toxins. To reduce the use of ozone-depleting chemicals, the Program Office reviewed its technical orders for the C/KC-135 aircraft to identify alternatives to hazardous materials required in the technical orders. The Program Office was able to eliminate all but three mission-essential, ozone-depleting substances. To reduce the use of industrial toxins, the Program Office prototyped and implemented a paint-stripping process on the aircraft at Tinker Air Force Base depot. Further, the Program Office adopted a mechanical means of depainting aircraft at the E-Systems and Boeing Company depots. As a result of those efforts, from 1993 through 1997, the Program Office reported that it reduced the annual use of ozone-depleting chemicals from 100,151 pounds to 200 pounds (99.8 percent) and reduced the annual use of "Environmental Protection Agency 17" industrial-toxins from 1.5 million pounds to 300,000 pounds (80.8 percent).

Corrosion- and Fade-Resistant Paint. As of February 1999, the C/KC-135 Program Office was testing new paints that will better protect the aircraft from corrosion and keep painting operations compliant with environmental and occupational health regulations. The Program Office expects to start painting its aircraft with a new corrosion- and fade-resistant paint by December 31, 1999.

Overall, the Program Office provided for the reduction and elimination of hazardous material in the C/KC-135. However, the Program Office did not include the cost of demilitarization and disposal of the C/KC-135 aircraft at the

³Industrial toxins include the Environmental Protection Agency's list of 17 industrial toxins and the Air Force Material Command's list of the top 24 toxic-release inventory items

end of their useful lives in the program's life-cycle cost estimate. In addition, the Program Office did not develop a programmatic environmental, safety, and health evaluation. A discussion of the associated findings follows.

A. Environmental Life-Cycle Costs

The C/KC-135 Program Office did not include the cost of demilitarization and disposal of the C/KC-135 at the end of its useful life in the program's life-cycle cost estimate. The Program Office did not include demilitarization and disposal costs because the Air Force cost analysts did not include a cost element in their cost model to account for demilitarization and disposal of the aircraft and associated infrastructure. As a result, the Program Office cannot accurately report in Air Force financial statements the liability for demilitarization, disposal, and cleanup costs for the C/KC-135 over the next 41 years.

Life-Cycle Cost Estimating Guidance

DoD Guidance. DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," Change 4, May 11, 1999,⁴ requires that life-cycle cost estimates be comprehensive and identify all costs for developing, producing, and operating a system regardless of the source of funding.

Air Force Guidance. Air Force Instruction 16-402, "Aerospace Vehicle Assignment, Distribution, Accounting, and Termination," August 1, 1997, provides procedures for programming, assigning, transferring, distributing, accounting, and terminating Air Force aerospace vehicles. The Instruction also directs how the Air Force will process aerospace vehicles after they become excess to DoD operational needs and after they satisfy DoD reclamation requirements.

Federal Financial Accounting Standards Guidance. The Statement of Federal Financial Accounting Standards (SFFAS) No. 6, "Accounting for Property Plant, and Equipment," requires that Federal agencies, beginning in FY 1998, recognize a liability in agency financial statements for cleanup costs associated with Federal property, plant, and equipment, including weapon systems, when the agency places the property, plant, and equipment into service. SFFAS No. 6 defines cleanup costs as those costs to remove, contain, or dispose of, or any combination of the three, hazardous waste from material or property that is permanently or temporarily shut down. In addition, cleanup costs include decontaminating, decommissioning, site restoring, site monitoring, and closure and post-closure costs. DoD has not provided guidance to the Military Departments for reporting on the environmental liability.

C/KC-135 Life-Cycle Cost Estimate

In April 1998, the Assistant Secretary of the Air Force (Acquisition) designated the C/KC-135 Program Office as a pilot program for the Under Secretary of

⁴DoD initially issued DoD Regulation 5000.2-R on March 15, 1996, and it included the life-cycle cost requirement.

Defense for Acquisition and Technology's "Reduction in Total Operating Cost" initiative. The C/KC-135 Program Office obtained the support of the Oklahoma City Air Logistics Center, Cost Analysis Branch, to develop a total life-cycle cost estimate. The Cost Analysis Branch used the Cost-Oriented Resource Estimating model (the Estimating model), actual C/KC-135 operational cost data, and Air Force cost factors to compute the total-ownership cost for the 548 KC-135 stratotankers.⁵ The Cost Analysis Branch projected a life-cycle cost estimate of \$76 million for operating 548 aircraft with an estimated remaining economic life of 41 years, from FYs 2000 through 2040. However, the Cost Analysis Branch did not include a cost element for demilitarization and disposal of the aircraft in the Estimating model's cost-element structure because:

- it did not consider demilitarization and disposal costs to be significant,
- the Aerospace Maintenance and Regeneration Center was responsible for demilitarization and disposal costs, and
- environmental cleanup costs were hard to assign.

Demilitarization and Disposal Cost Consideration. The Cost Analysis Branch did not consider demilitarization and disposal costs to be a significant element of its life-cycle cost estimate because the C/KC-135 Program Office and major command users of the system did not budget for those costs. Further, the Program Office contended that environmental cleanup costs were too difficult to estimate for the C/KC-135 system and that pollution was unlikely to occur because operating safeguards would protect the environment.

Aerospace Maintenance and Regeneration Center Responsibility. The C/KC-135 Program Office also did not budget for the disposal or demilitarization of the C/KC-135 system because the Aerospace Maintenance and Regeneration Center (the Center) is responsible for budgeting for reclamation and disposal of aerospace vehicles, including the C/KC-135 aircraft. Aerospace vehicles that the C/KC-135 Program Office and the Center identify for disposal undergo environmental cleanup and other preparations before they transfer to the Defense Reutilization and Marketing Organization for final disposition. The Center estimated that the cost to prepare the C/KC-135 aircraft for disposal would be approximately \$8.8 million,⁶ which does not include other environmental cleanup activities, such as base cleanup, that may be necessary.

Environmental Cleanup Costs. According to the Program Office, the C/KC-135 aircraft was assigned to 40 operations units, deployed in 26 states and worldwide, and may operate for 41 more years. Because of its wide geographical deployment and 43-year operational and support history, the C/KC-135 has been and still is subject to changes in environmental laws. Further, the C/KC-135 Program Office stated that the maintenance depots and

⁵The Cost Analysis Branch did not include the 46 special-purpose variants of the stratotanker aircraft in the C/KC-135 life-cycle cost.

⁶This amount does not include an additional \$0.8 million to dispose of special-purpose variants and \$1.6 million to dispose of retired, training, and excess C/KC-135 aircraft.

the field-level maintenance facilities for the C/KC-135 aircraft maintain more than one type of Air Force aerospace vehicle. Therefore, the maintenance depots and the field-level maintenance facilities have a hard time assigning environmental cleanup costs for any one particular type of aerospace vehicle.

The C/KC-135 Program Office identified maintenance depots as the major user of hazardous chemicals for the C/KC-135. However, field-level maintenance facilities limited their use of hazardous material to painting and sealant maintenance. Because of the very stringent environmental regulations and modern containment systems, the Program Office believed that maintenance depots and field-level maintenance facilities discharged very little hazardous waste into the environment. Further, the Program Office believed that any waste lost to the environment would be accidentally discharged, making cleanup cost estimates hard to quantify and the events difficult to predict.

Estimating and Reporting DoD Liability for Aircraft Disposal

The General Accounting Office Report No. AIMD-98-9, "DoD's Liability for Aircraft Disposal Can Be Estimated," November 1997, states that:

- DoD did not implement SFFAS No. 6 that requires recognizing and reporting liabilities such as those associated with aircraft disposal.
- DoD did not provide implementation guidance to the Military Departments.
- Aircraft disposal was an ongoing process and the Military Departments could reasonably estimate the disposal cost.
- Information on the three major disposal processes, namely demilitarization, storage and maintenance, and hazardous materials removal and disposal, was available to help develop cost estimates.
- DoD officials stated that the total disposal cost estimate for aircraft would result in a significant liability.

The Report also states that Congress, in the National Defense Authorization Act for FY 1995, required DoD to develop life-cycle environmental costs, including demilitarization and disposal costs, for new weapon systems.

Accuracy of Life-Cycle Cost Estimate

By not including the cost of demilitarization and disposal of the C/KC-135 in the program's life-cycle cost estimate, the C/KC-135 Program Office understated the total life-cycle costs for the C/KC-135. Without an accurate life-cycle cost estimate, the System Program Director would not have accurate information on which to make informed decisions to reduce total ownership costs for the C/KC-135. As indicated in the Background section of this report, reducing total ownership costs for major Defense systems is a DoD acquisition management initiative. A weapon system incurs more than 60 percent of its life-cycle cost

after it is fielded. Accordingly, an accurate life-cycle cost estimate would also provide a more realistic estimate of the program costs and provide management with better information to determine budget resource requirements for the C/KC-135. Without an accurate life-cycle cost estimate that includes the cost of demilitarization and disposal, the Program Office also cannot accurately report the liability for C/KC-135 environmental cleanup and disposal costs in future Air Force financial statements. Because the C/KC-135 is a fielded system, the Air Force is required to report the environmental cleanup and disposal cost liability in accordance with SFFAS No. 6 when DoD guidance becomes available.

Recommendation and Management Comments

- A. We recommend that the C/KC-135 System Program Director include a cost element in the C/KC-135 life-cycle cost estimate to account for C/KC-135 demilitarization and disposal costs.**

Management Comments. The Principal Deputy Assistant Secretary (Acquisition and Management), Office of the Assistant Secretary of the Air Force (Acquisition), concurred with the recommendation, stating that the C/KC-135 Program Office will include demilitarization and disposal cost elements in the C/KC-135 Economic Service Life Study (the Study) that an integrated product team is directing. The integrated product team plans to award the contract for the Study on January 1, 2000, with the final report due on September 30, 2000. The contractor will use the May 1998 Air Force Material Command "Weapon System Environment, Safety, and Health (ESH) Cost Analysis Guide" that contains information on assessing demilitarization and disposal costs to perform the Study. Further, the contractor will consider system demilitarization and disposal information resulting from the Air Force Material Command Weapon System Pollution Prevention Center Working Group meeting in March 1999 at the Aerospace Maintenance and Regeneration Center. The complete text is in the Management Comments section of this report.

B. Programmatic Environmental, Safety, and Health Evaluation

The C/KC-135 Program Office did not develop a programmatic environmental, safety, and health evaluation (PESHE) that included an environmental strategy, program environmental responsibilities, and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle. The Program Office did not develop a PESHE because the Program Office relied on the C/KC-135 Weapon System Pollution Prevention Master Plan (the Master Plan) to address the environmental requirements of the C/KC-135; however, the Master Plan did not include those requirements. Without the evaluation, the Program Office cannot ensure that it is aware of the impact of environmental, safety, and health issues on mission and cost and may also be forgoing opportunities to further reduce environmental life-cycle costs over the extended life span of the C/KC-135.

Environmental, Safety, and Health Evaluation Policy

DoD Regulation 5000.2-R, Change 4, May 11, 1999,⁷ requires that all programs, regardless of acquisition category, conduct environmental, safety, and health analyses to integrate environmental, safety, and health issues into the system engineering process. The analyses must support the development of a PESHE that the program office includes in the acquisition strategy. The program manager must initiate the PESHE at the earliest possible time, usually in support of a program initiation decision (Milestone I), and must update the evaluation throughout the life cycle of the program. Acquisition managers use the PESHE to do the following:

- describe the program manager's strategy for meeting environmental, safety, and health requirements;
- establish program responsibilities; and
- identify how a program manager will track progress.

Environmental, Safety, and Health Evaluation

The C/KC-135 Program Office used the C/KC-135 Weapon System Pollution Prevention Master Plan (the Master Plan) in place of a PESHE to implement its hazardous material and pollution prevention program. However, the Master Plan did not include an environmental strategy, program environmental responsibilities, and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle. In February 1999,

⁷DoD initially issued DoD Regulation 5000.2-R on March 15, 1996, and it included the environmental, safety, and health evaluation policy.

the Program Office stated that it would include a section in the Master Plan that would serve as a formal C/KC-135 PESHE when it updates the Master Plan within the next few months. The Program Office should annually review the PESHE in the Master Plan to incorporate the environmental effect of upgrades to the program, as appropriate.

Benefits of Environmental, Safety, and Health Evaluation

When program managers perform the analyses for the PESHE, they gain timely information on the potential environmental, safety, and health effects of developing, fielding, storing, demilitarization, and disposing of their weapon systems. The information is critical because any unforeseen environmental, safety, or health effects that violate local, state, or Federal law could cause lengthy program delays and affect mission and program cost. Moreover, negative effects may lessen opportunities to further reduce maintenance-process environmental life-cycle costs over the extended life span of the C/KC-135, including upgrades to the program, as appropriate. Therefore, the program manager must analyze and document all possible programmatic actions and update the evaluation throughout the program's life cycle.

Recommendation and Management Comments

B. We recommend that the C/KC-135 System Program Director annually review the programmatic environmental, safety, and health evaluation in the C/KC-135 Weapon System Pollution Prevention Master Plan to incorporate the environmental effect of upgrades to the program, as appropriate.

Management Comments. The Principal Deputy Assistant Secretary (Acquisition and Management), Office of the Assistant Secretary of the Air Force (Acquisition), concurred with the recommendation, stating that the C/KC-135 Program Office will include a PESHE in its 1999 annual update of the C/KC-135 Pollution Prevention Master Plan. The Program Office will consider the experiences that other Air Force programs have had preparing a PESHE and will use the Air Force "Environmental, Safety and Health Evaluation Development Guide for Single Managers," November 1996, to prepare the PESHE. Further, the Program Office will include an environmental, safety, and health checklist in its PESHE that it will use to annually assess progress and to identify needed updates. The complete text is in the Management Comments section of this report.

Appendix A. Audit Process

Scope and Methodology

We conducted this audit from December 1998 through March 1999 and reviewed documentation dated from June 1995 through February 1999. To accomplish the audit objective, we took the following steps:

- discussed the issues relating to DoD environmental management and the associated acquisition strategy with Government and depot maintenance personnel;
- assessed whether the C/KC-135 Program Office implemented the DoD environmental management process in accordance with DoD Regulation 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," Change 4, May 11, 1999;
- reviewed life-cycle costs of the C/KC-135 Program to determine whether the Program Office included the environmental costs;
- evaluated Defense Contract Management Command involvement to reduce life-cycle environmental costs and liability and improve environmental quality and program performance;
- reviewed the depot maintenance environmental program for the C/KC-135 and available supporting documentation;
- determined whether the C/KC-135 Program Office had adequate funding to test alternative environmental technologies to reduce pollution;
- determined whether the C/KC-135 Program Office searched for opportunities to form partnerships for environmental projects, environmental alternative test and evaluation, and validation testing; and
- determined whether the C/KC-135 Program Office was aware of the environmental management process.

Auditing Standards. We conducted this program audit in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We included such tests of management controls as we deemed necessary.

Use of Computer-Process Data. We did not rely on computer-processed data to develop conclusions on this audit.

Contacts During the Audit. We visited or contacted individuals and organizations within DoD and Pemco Aeroplex, Incorporated, Birmingham, Alabama. Further details are available upon request.

DoD-Wide Corporate-Level Government Performance and Results Act Goals. In response to the Government Performance and Results Act, DoD established 6 DoD-wide corporate-level performance objectives and 14 goals for meeting the objectives. This report pertains to achievement of the following objective and goal.

Objective: Fundamentally reengineer DoD and achieve a 21st century infrastructure. **Goal:** Reduce costs while maintaining required military capabilities across all DoD mission areas. (**DoD-6**)

DoD Functional Area Reform Goals. Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following acquisition functional issue area objective and goal.

Objective: Fostering Partnerships. **Goal:** Reduce total release of toxic chemicals by 20 percent. (**ACQ-2.4**)

General Accounting Office High-Risk Area. The General Accounting Office has identified several high-risk areas in DoD. This report provides coverage of the Defense Weapons Systems Acquisition high-risk area.

Management Control Program Review

The DoD Directive 5010.38, "Management Control (MC) Program," August 26, 1996, requires DoD managers to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of the controls.

Scope of Review of Management Control Program. In accordance with DoD Directive 5000.1, "Defense Acquisition," March 15, 1996, and DoD Regulation 5000.2-R, acquisition managers are to use program cost, schedule, and performance parameters as control objectives to implement the requirements of DoD Directive 5010.38. Accordingly, we limited our review to management controls directly related to the hazardous material management of the C/KC-135. Because we did not identify a material weakness, we did not assess management's self-evaluation.

Adequacy of Management Controls. Management controls were adequate in that we did not identify any material management control weakness applicable to the audit objective.

Summary of Prior Coverage

During the last 5 years, the General Accounting Office; the Inspector General, DoD; and the Military Department audit agencies have not issued reports specifically addressing the adequacy of planning and providing for the reduction and control of hazardous materials for the C/KC-135. The Inspector General, DoD, recently issued Report No. 99-160, "Hazardous Material Management on the Grizzly Program," May 17, 1999, that addresses the adequacy of planning and providing for the reduction and control of hazardous materials for the Grizzly Program.

Appendix B. Definitions of Technical Terms

Acquisition Category. An acquisition category is an attribute of an acquisition program that determines the program's review level, decision authority, and applicable procedures. The acquisition categories consist of I, major Defense acquisition programs; IA, major automated information systems; II, major systems; and III, all other acquisition programs.

Aerospace Vehicles. Aerospace vehicles include aircraft, remotely piloted vehicles, aerial target drones, and missiles.

Demilitarization. Demilitarization is part of the disposal process and is the act of deactivating or rendering a system inoperable by destroying its inherent military offensive or defensive advantage.

Disposal. Disposal is the process of redistributing, transferring, donating, selling, or demilitarization of a system.

Hazardous Material. Hazardous material is any waste that because of its quantity; toxicity; corrosiveness; flammability; or physical, chemical, or infectious characteristics may:

- cause or significantly contribute to an increase in mortality or an increase in a serious irreversible or incapacitating reversible illness; or
- pose a substantial present or potential hazard to human health or the environment when the waste is improperly treated, stored, transported, or disposed of.

Life-Cycle Cost. Life-cycle cost is the total cost to the Government of acquiring and owning a system over its useful life and includes the cost to develop, acquire, operate, support, and dispose of the system.

Programmatic Environmental, Safety, and Health Evaluation. The programmatic environmental, safety, and health evaluation describes the program manager's strategy for meeting programmatic environmental, safety, and health evaluation requirements, establishes responsibilities, and identifies how progress will be tracked. The program manager will initiate the programmatic environmental, safety, and health evaluation at the earliest possible time, usually in support of a program initiation decision (Milestone I), and update the evaluation throughout the life-cycle of the program.

Reclamation. Reclamation is the removal of aerospace vehicles from operational service because of damage, depreciation, an administrative decision, or completion of service life.

Technical Order. A technical order is an official document describing technical information, instructions, and safety procedures related to the operation, maintenance, installation, or modification of equipment.

Testbed. A testbed is a system representation consisting partially of actual hardware or software, or both, and partially of computer models or prototype hardware or software, or both.

Appendix C. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
Deputy Under Secretary of Defense (Environmental Security)
Director, Defense Logistics Studies Information Exchange
Under Secretary of Defense (Comptroller)
Deputy Chief Financial Officer
Deputy Comptroller (Program/Budget)
Assistant Secretary of Defense (Public Affairs)

Department of the Army

Commander, Army Materiel Command
Auditor General, Department of the Army

Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Deputy Chief of Naval Operations (Logistics)
Auditor General, Department of the Navy
Deputy Chief of Staff (Installations and Logistics), Headquarters, Marine Corps

Department of the Air Force

Commander, Air Force Materiel Command
Assistant Secretary of the Air Force (Acquisition)
Commander, Oklahoma City Air Logistics Center
C/KC-135 System Program Director
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force
Chairman, Joint Acquisition Sustainment Pollution Prevention Activity

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Commander, Defense Contract Management Command
Commander, Defense Contract Management Command East
Commander, Defense Contract Management Command West
Director, National Security Agency
Inspector General, National Security Agency
Inspector General, Defense Intelligence Agency

Non-Defense Federal Organizations and Individuals

Office of Management and Budget
General Accounting Office
National Security and International Affairs Division
Technical Information Center

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Reform
House Subcommittee on Government Management, Information, and Technology,
Committee on Government Reform
House Subcommittee on National Security, Veterans Affairs, and International
Relations, Committee on Government Reform

Department of the Air Force Comments



OFFICE OF THE ASSISTANT SECRETARY

DEPARTMENT OF THE AIR FORCE
WASHINGTON, DC

25 MAY 1999

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING
OFFICE OF THE INSPECTOR GENERAL
DEPARTMENT OF DEFENSE

FROM: SAF/AQ
1060 Air Force Pentagon
Washington DC 20330-1060

SUBJECT: Draft Audit Report on Hazardous Material Management for the C/KC-135
Stratotanker Aircraft, 26 March 1999, DoD(IG) Project No 8AE-5037.01

This is in reply to your memorandum requesting the Assistant Secretary of the Air Force (Financial Management and Comptroller) provide Air Force comments on the subject report. The Air Force concurs with both of the DoD(IG) findings and recommendations and the attachment describes the actions the C/KC-135 Program Office plans to take in response to the recommendations. In addition, the Air Force will share these findings and recommendations with its other Program Offices.

A handwritten signature in black ink, appearing to read "Darleen A. Druyun".

DARLEEN A. DRUYUN
Principal Deputy Assistant Secretary
(Acquisition & Management)

Attachment: a/s

cc:
SAF/AQQ
SAF/MIQ
HQ USAF/ILE
OC-ALC/LC

**SAF/AQ RESPONSES TO THE FINDINGS AND RECOMMENDATIONS IN
THE DRAFT AUDIT REPORT ON
HAZARDOUS MATERIAL MANAGEMENT FOR THE
C/KC-135 STRATOTANKER AIRCRAFT, 26 MARCH 1999,
DoD(IG) PROJECT No. 8AE-5037.01**

FINDING A. Environmental Life-Cycle Costs

The C/KC-135 Program Office did not include the cost of demilitarization and disposal of the C/KC-135 at the end of its useful life in the program's life-cycle cost estimate. The Program Office did not include demilitarization and disposal costs because the Air Force cost analysts did not include a cost element in their cost model to account for demilitarization and disposal of the aircraft and associated infrastructure. As a result, the Program Office cannot accurately report in Air Force financial statements the liability for demilitarization, disposal, and cleanup costs for the C/KC-135 over the next 41 years.

RECOMMENDATION A.

The DoD(IG) recommends that the C/KC-135 System Program Director include a cost element in the C/KC-135 life-cycle cost estimate to account for C/KC-135 demilitarization and disposal costs.

SAF/AQ RESPONSE A.

Concur. The Program Office will include demilitarization and disposal cost elements in the C/KC-135 Economic Service Life Study being directed by an Integrated Product Team (IPT) that includes representatives from both the Program Office and Air Mobility Command, the lead Air Force using command for the C/KC-135. The IPT has scheduled contract award for this study for 1 January 2000 with the final report due 30 September 2000.

The C/KC-135 Economic Service Life Study will utilize the May 1998 Air Force Material Command (AFMC) "Weapon System Environment, Safety, and Health (ESH) Cost Analysis Guide." This guide contains information on assessing demilitarization and disposal costs and is in the Air Force portion of the DoD Acquisition Deskbook, available through the following web site -- <http://www.afmc.wpafb.af.mil/HQ-AFMC/DR/dri-home/deskbook/>. In addition, the C/KC-135 Program Office plans to take advantage of the training provided by the HQ AFMC Financial Management office on the use of this guide.

The C/KC-135 Economic Service Life Study effort to address demilitarization and disposal costs will also benefit from the recent initiative by the AFMC Weapon System Pollution Prevention Center Working Group (CWG) to focus on the issue of demilitarization and disposal of systems. The CWG began by meeting for three days in March 1999 at the Aerospace Maintenance and Regeneration Center (AMARC). The purpose of the meeting was to assess the available information sources and to share lessons learned so that the CWG representatives could take that information back and share it with the program offices. Representatives from the other services and DLA participated in this meeting, along with AMARC representatives.

Attachment 1 (Page 1 of 2)

FINDING B. Programmatic Environmental, Safety, and Health Evaluation

The C/KC-135 Program Office did not develop a programmatic environmental, safety, and health evaluation (PESHE) that included an environmental strategy, program environmental responsibilities, and a methodology to track and document the completion of the environmental strategy throughout the acquisition life-cycle. The Program Office did not develop a PESHE because the Program Office relied on the C/KC-135 Weapon System Pollution Prevention Master Plan (the Master Plan) to address the environmental requirements of the C/KC-135; however, the Master Plan did not include those requirements. Without the evaluation, the Program Office cannot ensure that it is aware of the impact of environmental, safety, and health issues on mission and cost and may also be foregoing opportunities to further reduce environmental life-cycle costs over the extended life span of the C/KC-135. In February 1999 the Program Office agreed that when it updates the Master Plan it will add a section that will serve as a formal C/KC-135 PESHE.

RECOMMENDATION B.

The DoD(IG) recommends that the C/KC-135 System Program Director annually review the programmatic environmental, safety, and health evaluation in the C/KC-135 Weapon System Pollution Prevention Master Plan to incorporate the environmental effect of upgrades to the program, as appropriate.

SAF/AQ RESPONSE B.

Concur. The Program Office will incorporate a programmatic environmental, safety, and health (ESH) evaluation during their 1999 annual update of the C/KC-135 Pollution Prevention Master Plan. As required by Paragraph 3.3.7 of DoD Regulation 5000.2-R, this evaluation will describe (1) the C/KC-135 program's strategy for meeting the systems engineering ESH requirements in Paragraph 4.3.7 of DoD 5000.2-R; (2) the Program Office ESH responsibilities; and (3) how the Program Office will track progress in meeting its ESH requirements. The systems engineering ESH requirements as defined in Paragraph 4.3.7 include compliance with the National Environmental Policy Act (NEPA), environmental compliance, system safety and health assessments and risk management, hazardous materials management, and pollution prevention.

The C/KC-135 Program Office will leverage lessons learned from other Air Force programs that have prepared PESHEs as stand alone documents and those that have incorporated their ESH evaluations into their Single Acquisition Management Plans (SAMPs) and their Test and Evaluation Master Plans (TEMPS). The C/KC-135 Program Office also plans to utilize the Air Force developed "Environmental, Safety and Health Evaluation Development Guide for Single Managers," dated November 1996. As with the ESH Cost Guide, this guidance document is in the Air Force portion of the DoD Acquisition Deskbook, and is also available at the following web site: <http://www.hanscom.af.mil/ESC-BP/pollprep/eshguide.htm>. The C/KC-135 Program Office's programmatic ESH evaluation will include an ESH checklist that its management will review annually to assess progress and to identify needed updates.

Attachment 1 (Page 2 of 2)

Audit Team Members

The Acquisition Management Directorate, Office of the Assistant Inspector General for Auditing, DoD, prepared this report.

Thomas F. Gimble
Patricia A. Brannin
John E. Meling
Jack D. Snider
Neal J. Gause
Jenshel D. Marshall

INTERNET DOCUMENT INFORMATION FORM

**A . Report Title: Hazardous Material Management for C/KC-135
Stratotanker Aircraft**

B. DATE Report Downloaded From the Internet: 09/13/99

**C. Report's Point of Contact: (Name, Organization, Address, Office
Symbol, & Ph #): OAIG-AUD (ATTN: AFTS Audit Suggestions)
Inspector General, Department of Defense
400 Army Navy Drive (Room 801)
Arlington, VA 22202-2884**

D. Currently Applicable Classification Level: Unclassified

E. Distribution Statement A: Approved for Public Release

**F. The foregoing information was compiled and provided by:
DTIC-OCA, Initials: __VM__ Preparation Date 09/13/99**

The foregoing information should exactly correspond to the Title, Report Number, and the Date on the accompanying report document. If there are mismatches, or other questions, contact the above OCA Representative for resolution.